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ILLINOIS HISTORICAL SURVEY

St4<sup>m</sup> THE MACKENZIE RIVER BASIN

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E V I D E N C E

OF

MR. ELIHU STEWART

*Superintendent of Dominion Forestry*

BEFORE THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

1906-7

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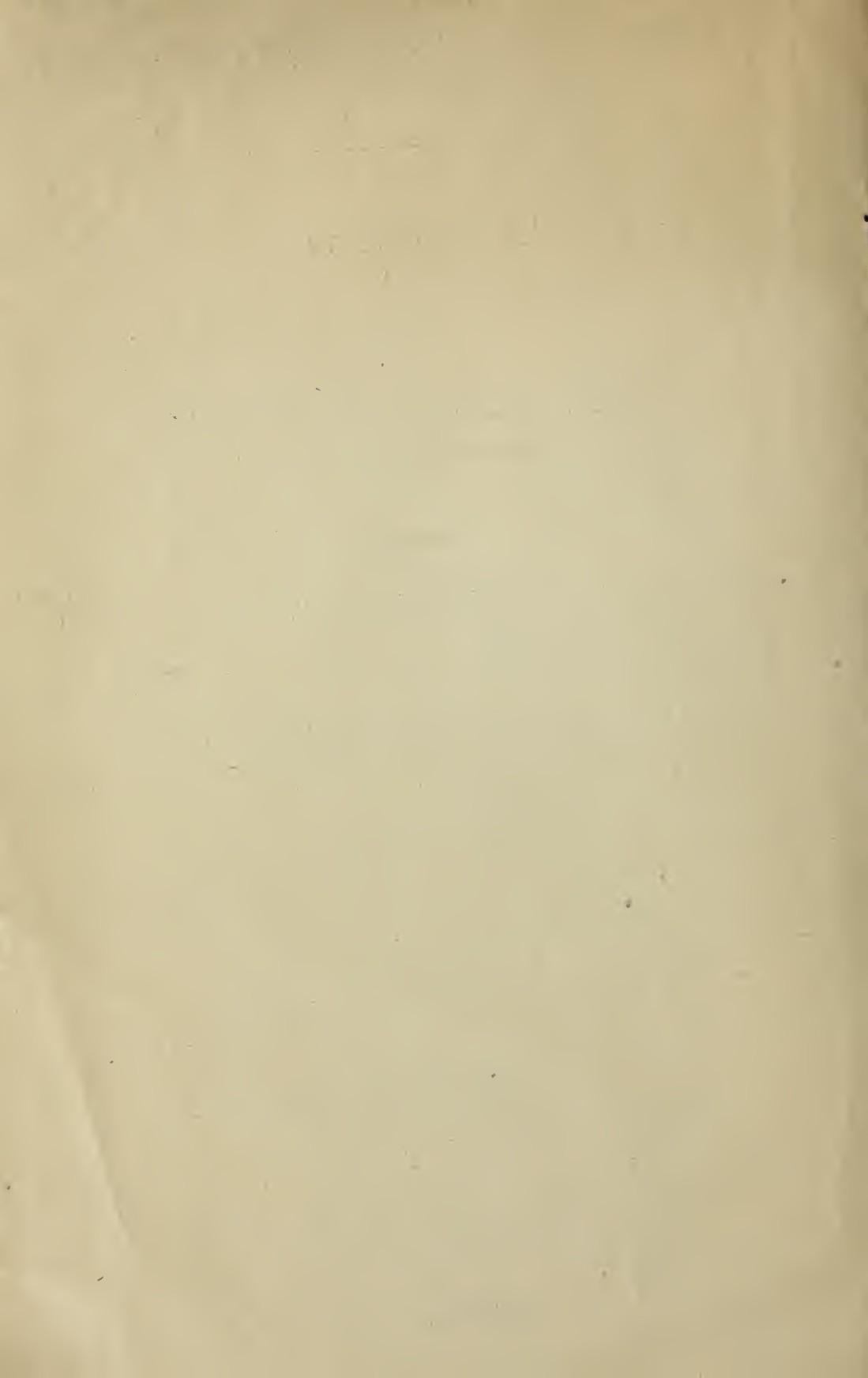


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Survey

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# THE MACKENZIE RIVER BASIN.

HOUSE OF COMMONS,  
Room 34,  
January 30, 1907.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.30 o'clock a.m., the chairman, Mr. McKenzie, presiding.

The CHAIRMAN.—Gentlemen, we have with us this morning Mr. Elihu Stewart, Dominion Superintendent of Forestry, and I have much pleasure in introducing him to the committee.

Mr. STEWART.—Mr. Chairman and Gentlemen,—I have had several opportunities of appearing before this committee before and for that reason it will perhaps not be necessary for me to go over all the ground that I otherwise would. I shall endeavour to be as brief as possible and to give as much information as I can regarding the work under the Forestry branch of the Department and after that, a résumé of a trip I took last season down the Mackenzie river.

## PROTECTION OF FORESTS AGAINST FIRE.

As you are aware, a few years ago the department undertook the work of guarding timber on Dominion lands. The system worked out then was, that the government should appoint fire rangers and the cost of the work would be divided between the Government and the holders of timber licenses, the Government paying the whole cost of that upon unlicensed territory. The reason of this will be apparent. It would be unfair, of course, and even absurd, to charge the limit holders for any territory which they had no claim on, and on the other hand the Government having an interest even in the licensed timber, it was considered that the system that had been followed in the Provinces of Quebec and Ontario would be a fair one: that is the limit holders should pay one half the cost of guarding this timber. During the past season we have had 74 regular rangers employed and the total cost of the service was \$28,809. Of this number 26 were in British Columbia and 48 east of the Rockies. In addition to this a number of extra men were employed for short periods to quell bad fires. I might say that these rangers, who are regularly employed, have authority, in case of a disastrous fire occurring, to call out additional assistance for a short time, the accounts being vouched for by the fire rangers before they are presented for payment. In addition to this work, during the past season ten men were employed in making a careful examination of the Riding Mountain reserve at a cost of \$2,532. The object of this work on the reserves that have been set aside by Act of Parliament was in order that we might know what we actually had on these areas. Examinations were conducted in the Moose Mountain reserve and in the Turtle Mountain reserve last year. The data collected has enabled us to locate and map the timber, to ascertain the extent of fires on the reserves, and the roads or trails needed for the protection and administration of the reserves, also an estimate of the amount of fuel and saw material available for use.

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## FOREST RESERVATIONS.

The result of the past year's work has not been collected yet, or at least not tabulated, but just to give an idea of the formation that we have regarding the Turtle Mountain reserve, I might say that from the measurements that were made—(every tree was not measured but strips were measured and an average taken)—it was found that we have over 77,000 cords of green fuel in those mountains, over 91,000 cords of dry wood, and over 1,000,000 feet of saw material—that is, timber fit for lumber. In the Moose Mountains we have 93,000 cords of green fuel, 100,000 cords of dry fuel, and something like 5,000,000 feet of saw material. I am speaking of the forest reserves. You perhaps will remember that at the last session of Parliament an Act was passed by which 21 forest reserves were created, part being in the railway belt of British Columbia and part in the two new provinces, and also in certain districts in Manitoba.

The whole area of these reserves is 5,391 $\frac{1}{4}$  square miles. . The Act in question places the management of them under the Forestry branch, and also provides that these shall be more than simple timber reserves : they are to be reserved for fish, game and all the animals in them. We are endeavouring to work out a system of service there which I think will be of very great value. In our northern territory we have a country which, in addition to the very important asset of timber, contains valuable fur-bearing animals, and I can see no reason why these timber reserves should not also be game preserves, not only for the animals for the chase but also for the sake of the fur they will produce.

## TREE PLANTING.

I shall go on to speak of the tree planting. You are aware that since the year 1900 we have been engaged, in co-operation with the prairie settlers of the Northwest, in growing forest trees. This has grown to be a very important part of the work of the Forestry branch. I have tabulated the distribution of trees from the time that we started the work. In 1901 we supplied 18 farmers with 58,000 trees. In 1902 we supplied 415 applicants with 468,000 trees. In 1903 we supplied 627 applicants with 920,000 trees. In 1904, 127,000 applicants with 1,800,000 trees. In 1905, 1,122 applicants with 2,000,000 trees in round numbers. In 1906 there were 1,200 applicants who received 2,100,000 trees.

*By Dr. Barr:*

Q. Might I ask you, do you give those trees free to the farmers ?

A. Yes.

Q. How do they send in their application ?

A. If you will just pardon me one minute, I will explain this first. In 1907, this season, we have ready to distribute two million trees to 1,421 applicants. When we have distributed those that are now 'heeled in' ready to distribute, tied up ready for distribution this coming spring, we will have distributed a total of 9,346,000 trees, and the average number supplied to each applicant is 1,400.

Now, in answer to the question as to the system on which we proceed in this work, I would say that any applicant wishing to act in co-operation with the government in the growing of trees makes application to the office here. He may apply on a slip of paper or a postal card, or in any way at all and let us know that he wants to co-operate with us. We then send to the applicant a form which he fills out, giving the number of his lot, his post office address, express office and other information which we need. We do this because so frequently in writing the applicants do not give us this information. Upon that printed form they make their formal application which is filed. For next season the applications are coming in now, and next season every one of these applicants will be visited by an inspector who will inspect the ground and take notes of the kind of soil intended to be used. When we receive the inspector's report we will be able to determine what kind of trees will best suit that particular district. A little plan is made of the ground where they are to plant

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the trees, and they enter into an agreement with the department that they will, if furnished the trees free, set aside a certain portion of their land for the purpose, that they will not destroy the trees, that they will keep them fenced and will preserve them from fire; also that they will keep them cultivated for about five years, or until such time as they do not require further cultivation.

Q. What kind of trees have you for distribution?

A. The principal varieties are the Manitoba maple, the green ash, the cottonwoods, and in certain cases the Russian poplar and some elms. The main object is to assist the settler in growing shelter belts on his homestead. We do not aim at furnishing all the trees that we hope will be grown in the Northwest eventually, but we are doing an educative work and, at the same time, giving a shelter belt or fringe to the more delicate shrubbery and coniferous trees, and it is expected that the settler will follow up the work in this direction.

*By Mr. McCraney:*

Q. From what part of the west are these applications coming in?

A. The applications are general from all parts of the prairie between the Rocky Mountains and the Red river. But I want to say this that we do not supply trees to anyone who is living where they have trees growing naturally. That is not the object. Our desire is to encourage the growing of trees where they are not grown now.

*By Mr. Lewis:*

Q. Have you any trees for distribution in Ontario and Quebec?

A. No. In fact the distribution is only made on prairie lands.

*By Mr. Blain:*

Q. Have you any statistics to show what proportion of these trees live?

A. That is a very important question and I am glad it has been asked. I had our inspectors, when they were going around, make an estimate, and although I have not yet had the estimate for this past year tabulated, but for the year before, going over the inspector's reports and taking the list of all that we had furnished during the years that the distribution had been in progress, and taking the number then living as estimated by the inspectors, the record shows that about 85 per cent were then living, that is 85 per cent of all that had been sent out were living in the summer of 1905.

*By Mr. Burrows:*

Q. How old are these trees when sent out?

A. The seed of the Manitoba maple is planted in the spring, taken up and heeled in the fall and sent out the next spring. The ashes take two years, and the elms, of course, take much longer.

At the present time I might say that the applications are coming in at a much greater rate than in previous seasons, we have an average of about fifteen applications received at our office each day, and they will increase much faster from this on until the first of March, when we cannot receive any more for this year.

*By Mr. McCraney:*

Q. Where do you get your supply of trees from?

A. I have placed on the wall here a photograph of trees growing in our nursery. We grow them at the Forest Nursery Station which we have established at Indian Head. At first when the work started the Agricultural Department was kind enough to allow us to use a portion of their land at the experimental farms at Brandon and Indian Head. The work, however, got so large, and we required so much land, that it was impossible for them to give it to us, so we took 160 acres just south of Indian Head, about  $1\frac{1}{4}$  miles from the station and we have concentrated the whole work

there. The trees are nearly all grown from seed, with the exception of the cottonwoods. The cottonwoods are difficult to grow from seeds, but cuttings can be got from along the river banks. We have got most of them from the river of Dakota near Bismark, the Missouri river; they grow along the bars there. We could not get them any other place as well or as cheaply as we do from that point. Nearly all we have are brought from there.

*By Mr. Wright (Renfrew):*

Q. Do you own that 160 acres?

A. Yes, we have taken that over, it was Indian lands. We are now acquiring 320 acres; there was 160 acres taken at first, but we have now enlarged it to 320 acres. I have some photographs of the buildings that we have erected there which will be passed around for the inspection of the members. We are not only growing trees for distribution there, but there will also be a permanent nursery, we are trying to find out what imported trees will grow in that climate under forestry conditions.

Q. Did you ever try walnut?

Q. No, but they have been tried at the experimental farm; we do not attempt to do anything that has already proved a failure when it has been well tried at the experimental farms. It is beyond the range of walnut or hickory. There was a question asked here once before about hickory, but it is useless, I think, to try it in that climate.

The objects aimed at in starting this system of co-operation were first, to assist the settlers on the bare prairies in growing a forest plantation on his homestead, and second, by so doing to educate not only the individual so assisted, but his neighbours in the work of sylviculture. Here is an object lesson all over the plains of the Northwest. It may be perhaps only one or two in one township, but if the settlers there see how those trees have grown, how they have been cultivated and under what conditions they have grown, they can go on and do the work for themselves. Many of them we hope will do so. More than that they will be able to grow fuel as well. If I had time I would be able to give figures to show that it will be profitable for them to grow a certain quantity of timber for fuel.

*By Mr. Shaffner:*

Q. In regard to Manitoba maples, have you any definite idea how long they will live?

A. How long they will live?

Q. There has always been an idea in the country that the Manitoba maples are not long-lived?

A. I think we had one on exhibition which was eighty years old.

Q. There is quite an impression in the west that the lives are from fifteen to twenty years?

A. I do not think they are long-lived trees by any means, but it is a capital tree for shelter purposes even if we only get it for a few years. Within that shelter other trees can be grown thus serving the desired purpose. The green ash is a much favoured tree in the west.

Q. So is the elm?

A. And the elm too, but the ash is easier grown there.

*By Mr. Lewis:*

Q. What is the difference between the Ontario maple and the Manitoba maple?

A. The Manitoba maple does not grow to the size that our maples do. It is not as hard as the hard maple. There are many points of difference between them.

*By Mr. Wilson (Lennox):*

Q. Is the Manitoba maple as hard as our soft maple?

A. I think it is quite as hard as our soft maple.

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*By Mr. Burrows:*

Q. I saw a few of those trees growing opposite the Surveyor General's office that were 10 to 12 inches in diameter?

A. Oh, yes.

*By Mr. Jackson (Selkirk):*

Q. Where do they call it box elder?

A. They call it box elder in Dakota. Our own maples are far better and we should never bring Manitoba maples here. But they are very hardy and they answer the purpose on the plains in a way that no other tree does.

## TREE NURSERY STATION.

*By Mr. Wright (Renfrew):*

Q. The fast-growing are poor trees as far as wood is concerned.

A. I might say a few words with regard to the nursery station at Indian Head, for I have not mentioned it before. The buildings were erected in 1904 when the land was bare prairie. One hundred and sixty acres have now been brought under cultivation or else is occupied by roads, buildings, dam and pasture. In 1906 24 acres were under actual nursery crops, 14 were summer fallowed. It is necessary that this ground should be worked up before we can plant the trees upon it: 25 acres were under oats; on 25 acres there was fresh breaking and backsetting, 15 acres under pasture, 14 acres under permanent plantation, and 14 acres were under hay and barley. According to carefully prepared figures based on the actual wages paid out and the time devoted to each department of work we found in 1905 57 cents represented the actual cost per thousand of raising the seedlings for distribution. Including the total wages paid out at the nursery in 1905 the average cost per thousand is brought up to \$1.42. Over 50 per cent of these wages represent preparing ground for future crops, fencing, laying out, caring for ornamental grounds, roads and drives, and caring for permanent plantations which cannot be properly charged against cost of seedlings. So that \$1.42 was the whole cost per thousand of trees. In 1907 there will be 37 acres under nursery plots of broad leaf seedlings and probably two acres more devoted to conifers. About 13 acres were set out in permanent plantation in the spring of 1905. The varieties were maple, cottonwood, ash, elm, birch, willow, Russian poplar, spruce and Scotch pine. One hundred and sixty acres adjoining the present nursery site, as I said, have also been transferred to the nursery station. The land at present is prairie, but will be brought under cultivation.

*By Mr. Shaffner:*

Q. You would not recommend the cottonwood?

A. Yes on heavy soil where quick growth is desired.

Q. Is it more durable than the Manitoba maple?

A. It is a better tree for fuel on account of its more rapid growth.

*By Mr. Adamson:*

Q. Does it last longer than the Manitoba maple?

A. I do not think so, probably about the same time.

*By Mr. Burrows:*

Q. It grows to a great size?

A. Yes.

*By Mr. Schell (Oxford):*

Q. How do you distribute your trees?

A. We distribute to the prairie sections of the west only.

Q. You do not send to people in towns or cities ?

A. No. We occasionally have endeavoured to work on those lines. That is to say schools often wish to have plantations, and we give them trees when the application is signed by the chairman of the school board and is otherwise all right. We have not given trees to cities because they are apt to be cut down as new buildings are added. There have been applications for trees for park purposes, and there was one, I think, in the case of Lethbridge and Medicine Hat, in which something was done by special agreement with the council, but there has not been any great development in that way. We did propose that we would assist in the giving of seed, and the inspectors would be able to state what kind of trees should be planted and so on. In that way assistance might be given but it is not our object to grow ornamental trees for distribution.

*By Mr. Lake:*

Q. Have you found that any considerable proportion to whom you supplied these trees failed to look after them ?

A. We have some cases.

Q. Are they only a small proportion ?

A. Yes a very small proportion. In some cases we have refused to furnish them with trees again for that reason. If it were not for the inspection carried on I think there would be many more such cases. The inspectors go round and remind them of the agreement in which they have undertaken to care for the trees and are not performing the obligation. I certainly think the inspection part of the work is most important.

*By Mr. Lewis:*

Q. Do you supply all that ask ?

A. We have been able to supply every applicant so far where the inspectors' reports state that ground has been properly prepared, but not always with the number they asked for.

Q. Do you supply them twice ?

A. Yes, if they take care of their trees and wish to extend their plantations we do what we can to let them go on. If they have not done so we refuse to supply them with more trees.

*By Mr. Lake:*

Q. Have you supplied any of the conifers ?

A. We have not done so yet.

Q. When do you propose to do so ?

A. It takes a great deal of time to raise conifers. We have only been started a short time and the conifers are hardly large enough yet for distribution. It is possible that in the future we may be able to make a distribution of some varieties of conifers; but owing to the difficulty of obtaining seed and the great care required in growing them in the nursery as well as in planting out, we cannot hope to make their distribution as general as we have in the case of the broadleaved seedlings.

Besides the stock heeled in for distribution, which I spoke of amounting to about two millions, we estimate there are at the nursery 1,200,000 one year old ash. As I said, the ash have to remain in the nursery two years. The Manitoba maples, which grow faster, we sow in the spring, take them up in the fall, heel them in, and distribute them the next spring. Of one year elms there are 300,000 in nursery rows. Seedling and transplanted conifers 500,000; making a total of 4,000,000 at present at the nurseries including those that are to be sent out this spring.

*By Mr. Findlay:*

Q. Excuse me, you speak about elm, is that the same elm as we have here ?

A. It is the *Ulmus Americana*, the ordinary American or white elm.

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Q. Is it the rock elm?

A. It is not the rock elm that we have.

*By Mr. Smith (Oxford):*

Q. Have you got any hardy varieties for crossbreeding in the Northwest, experimenting along the lines that Burbank has operated, for instance?

A. That is work that will have to be done at the experimental stations, we do not propose to engage in that work.

*By Mr. Kennedy:*

Q. Will any of those trees grow from slips, from their own cuttings?

A. Oh, yes, some of them will.

Q. Could not the farmers be instructed in raising trees from their own slips, keeping the stock growing all the time?

A. The cottonwoods will grow that way, and the willows also. Of course the farmers could do as you suggest.

Q. I would like to ask about those elm trees, have they been a success on the prairie where it is not well watered?

A. Yes, we have found that the elm we have will grow where it is properly cultivated. The information given me by the inspectors is that it will grow if there is proper cultivation. We find that even in southwestern Alberta those who relied on irrigation were less successful with these trees than those who depended on working up their soil well.

*By Mr. Lewis:*

Q. Without desiring to interfere with the order of matters, will you kindly explain that map on the wall at which we are all looking?

A. I think I have about finished now my remarks in connection with the tree planting and the forest work, and with your permission I will now go on to the other part of what I was announced to speak on.

*By Mr. Smith:*

Q. What conifers are hardy there, the white spruce?

A. Yes, the white spruce is hardy.

Q. Is that the only one?

A. No, we have the Scotch pine growing there very well with the native larch, which grows splendidly.

Q. Does the tamarack grow there, is the larch tamarack?

A. Yes.

*By Mr. Lake:*

Q. Do you consider the larch the best of those trees? Is it better than spruce?

A. Undoubtedly; I think the larch will be one of the best trees than can be grown, the larch for a conifer and the ash for a broadleafed tree, are the two trees that, in my opinion, are the best suited for the country. The larch or tamarack, as you know, is good wood for fuel and better than spruce for railway ties, fence posts, &c.

*By Mr. Kennedy:*

Q. It will grow on the high ground?

A. Yes.

*By Mr. Lake:*

Q. Will it grow as rapidly as spruce?

A. It will grow very rapidly, if you have been at Indian Head you will have seen it there, it has grown very far above the spruce.

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*By Mr. Smith (Wentworth):*

Q. Is the European larch the same as the tamarack ?

A. It is very much the same.

*By Mr. Wright (Muskoka):*

Q. Will the ordinary white pine grow there?

A. We are going to try it, it may grow, but we have not tried it yet. We will try all these various species of trees later on and hope to be able to give reports upon them.

*By Mr. Jaskson (Selkirk):*

Q. Are there any hardwood trees—can you name a single hardwood tree—whose home is in Ontario that will grow in the west?

A. I would not like to say whether it will or not——

*By Mr. Wright (Renfrew):*

Q. Does not the oak grow there?

A. The oak grows in the Pembina mountains and elsewhere in Southern Manitoba.

Q. Have you experimented with the Ontario oak to see whether it will grow there?

A. Trials have been made at the experimental farms, but they have not been successful.

Q. Then the Ontario oak will grow in Manitoba, for instance we have scrub oak in Manitoba, but is that the Ontario oak?

A. You have to discriminate there——

*By Mr. Jackson (Selkirk):*

Q. Just the same as we have the maple in Manitoba, but it is not the same we have in Ontario ?

A. It is not the white oak or the red oak you have growing there.

Q. You cannot grow them there ?

A. The trials before referred to at the experimental farms would indicate that these varieties will not grow there.

Q. Your experiments have not shown that they will grow there?

A. We have not made any tests yet.

Q. I have reference to hardwood timbers ?

A. Well, we will be doing that later on.

Now, if there is any question that any gentleman wishes to ask I will be glad to answer. I do not wish to pass on to another subject if there are any further questions.

*By Mr. Smith (Wentworth):*

Q. Do you find the seedlings hardier if grown from seed taken from trees in Manitoba, harder than from seed brought in from outside?

A. Yes, they are better.

*By Mr. Wright (Renfrew):*

Q. That oak I saw growing on the banks of the Rainy river is not that the same as the oak in Ontario ?

A. It looks to me to be the same.

*By Mr. Burrows:*

Q. The ordinary white oak is only grown in the eastern districts?

A. There is a difference between that oak and the western oak; I am not speaking of the Rainy river district.

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*By Mr. Lewis:*

Q. You are sending out trees to be planted afterwards on the prairies ; can you give any reason why there are no trees growing there now ? If the trees will grow there when you send them out why are there not trees growing there naturally ?

A. There have been trees growing on many parts of the prairie although there are no trees there now.

Q. But why is that ?

A. The prairie fires have swept over there.

Q. Why would that not be the same way in Ontario, where it is covered with forest ?

A. I have seen country in Ontario practically growing into prairie, but there is a reason why it should not do so to the same extent as in the west. There is more rainfall here, you have not fires sweeping over large districts in Ontario as they have there.

Q. You will see in the Saskatchewan valley and in the valleys of other rivers the land is covered with trees, how is it that they have not been swept clear ?

A. It is because the fires have not gone into the valleys, they have not swept through the valleys as they have over the prairie. The valleys have been protected by the rivers. I think that is the reason.

*By Mr. Burrows:*

Q. You made a statement some time ago that one of the important factors in connection with the timber reserves was the valuable fur that they contained. Now, I understand, that the local government has charge of the regulation of fur-bearing animals, of the catching and selling of furs ?

A. That may be, but in the Act that we passed last session there was a proviso which stated that as far as the Dominion Government had power—without pretending to give you the legal definition of that, I would say that the government stands in the same relation as the owners of those reserves, as a private person would. We will have to work under the provincial laws, no doubt, for the punishment of offenders, and with regard to the close season, perhaps, just the same as we have to work under the provincial laws for the punishment of violation of the law with reference to setting fires. It seems to me that is the way it works out, that the government just takes the position of a private individual as owner of these reserves.

Q. And the game on the reserve ?

A. Yes, I think, that the Dominion government would own the game, but in the north country there is a vast territory outside of the provinces where the game would be a most important matter to be looked after, and my idea is to make these forest reserves also preserves or fur farms, where we would raise fur-bearing animals, and perhaps improve them. Undoubtedly we have an asset in the northern country even as far as the Arctic in the fur-bearing animals which will increase with the value of furs, and the protection of these animals is worthy of careful attention.

*By Mr. Wright (Renfrew):*

Q. I just want to draw your attention to this fact that the oak flourishes around Fort Frances on the Rainy river ?

A. Yes.

Q. And when you leave Ontario and go to Oak Point (Point de Chene) in Manitoba there are oaks to be found also in Manitoba ?

A. Certainly there are oaks in the Pembina mountains, but there is no oak after you get far west. I do not think there is any oak west of the Province of Manitoba, certainly not far west of the boundary of that province.

MR. LAKE.—Between Broadview and Whitewood is where you see the last.

*By Mr. Kennedy:*

Q. Can you explain why it is there is oak on Vancouver Island and none on the mainland?

A. It is a question that is pretty hard to answer.

Q. I am merely making the statement that is the fact.

A. Oh, yes.

*By Mr. Herron:*

Q. Would it come under your department to protect the game in the Northwest or to recommend protection for game. There is great need of it in the foothills of the Rocky Mountains where the Indians, particularly the Stony Indians, are exterminating the deer and other game?

A. Yes, the Act that was passed last session with reference to the forest reserves makes provision for that. It says: 'That in order to protect and improve the forests for the purpose of maintaining a permanent supply of timber and to maintain the conditions favourable to a continual water supply and to protect, as far as the Parliament of Canada has jurisdiction, the animals, fish and birds within the respective boundaries of such reserves,' &c.

Mr. HERRON.—Just for the information of the committee, I might say that this time last year inside of four weeks, there were over 400 deer killed by Indians near where I live. They slaughtered 400 of them within a radius of perhaps 30 miles.

Mr. BARR.—What kind of deer?

Mr. HERON.—White tail and black tail.

Mr. STEWART.—I am sorry but that district is outside of the forest reserves and the Act would not apply there.

#### CEREALS GROWN IN HIGH NORTHERN LATITUDES.

Before I go any further let me say this: A few years ago, I think it was three years since, I made a trip from Edmonton to the Peace River country, going up the Athabasca and up Little Slave river to Slave Lake and then across to the Peace river. Although my object was, as it was last season, to ascertain the facts regarding the timber of the country, I thought it wise to take notes regarding the agricultural possibilities of that region, and I have here some samples of the wheat grown there. One sample is from Lesser Slave lake. Here is another that came from the Peace river, and there is also some wheat that came from the Roman Catholic mission on Lesser Slave lake.

*By Mr. Lewis:*

Q. Will you please point out those places on the map?

A. Yes, I will do so gladly. I would also say that I have here some hulled barley which also came from Lesser Slave lake and some tobacco from the Peace river country. I am afraid, Mr. Lewis, it will be very difficult to see at any distance the points which I would like to indicate on the map. Here is Edmonton and here is Athabasca Landing. On that trip to the Peace river I went up the Athabasca and then up Little Slave river to Lesser Slave lake, and then from Lesser Slave lake to this point at the end of the lake and then across to the Peace river landing. That is where the grain was grown which I have just exhibited to the committee. The latitude, as near as I can find it on the map, is 56 degrees.

#### AREA OF MACKENZIE RIVER BASIN.

Now, during the past season I undertook a trip for a much longer distance down the Mackenzie river. This map will show the timber areas as far as the data in our possession enables them to be outlined. You will see here what are called the bar-

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ren lands and here is what is called the northern forest area. Now that is supposed to be the limit of the northern forest growth.

Q. What is the latitude?

A. It is in various latitudes. Up here it is  $67^{\circ} 45'$ . Here is what are called the 'barren lands.' This is more or less wooded. I took a trip through this country to ascertain as far as I could the character of the timber. This line represents the northern forests. It is not densely wooded, and yet it is not prairie. This is the prairie region.

*By Mr. Burrows:*

Q. It is very small in area?

A. It is very small indeed compared to the whole region. The great river I am pointing out to you is the Mackenzie. The area of the Mackenzie basin is 451,400 square miles. To make a comparison between it and the St. Lawrence above Montreal, taking in all the great lakes and all the country on both sides of the boundary line within this watershed and the area of the latter is only 368,900 square miles or nearly one hundred thousand less than the area drained by the Mackenzie. I might put it in another way. Here is a large area which as you will notice takes in the main Saskatchewan as well as the two branches of that great river. It includes the whole of what is known as the fertile belt and yet it is scarcely one-third of the area drained by the Mackenzie river. I have the figures as nearly as they could be collected and the area drained by the Saskatchewan, including the main stream and both branches, is but 159,000 square miles, as against 451,000 drained by the Mackenzie river.

Now, as to my trip, I went to Edmonton and from there drove out to Athabaska Landing, a distance of about 100 miles. Then I took the steamer and went down about 165 miles to Grand Rapids. As I go along I will try and tell you what I saw as I proceeded through the country. It may be interesting or otherwise, but perhaps it will be the best thing for me to do. At Pelican rapids we saw a burning well. The government a few years ago caused several wells to be sunk in that country for oil. One was near Edmonton—at Victoria, I think.

#### COURSE OF TRAVEL—A BURNING GAS WELL.

They went down some 1,700 feet and the casing gave way and they could not go any further. They put down one also near Athabaska Landing which practically the same result. At Pelican Rapids at a depth I think of about 800 feet, going through several feet of tar sands they struck a flow of gas that was so strong as to interfere with further work. That gas well was burning when we were there.

Below that, we went to Grand Rapids in the steamer, and from there on to Fort McMurray, which is just here (indicating on map) at the entrance to Clear Water; that is 245 miles from Athabaska Landing. From Grand Rapids to Fort McMurray, a distance of 85 miles, we had to take scows. It took us longer to go that distance of 245 miles than it did all the rest of the way to the delta of the Mackenzie river. The water was very low and the steamer was aground more than half the time.

#### ASPHALT,—PROBABLE EXISTENCE OF OIL WELLS.

The reason of their boring for oil in that part of the country is owing to the presence there of vast areas of what is known as 'tar sand,' it is asphalt. This petroleum that has escaped, has oozed out from the sands, and is left in a condition something like that (exhibiting sample) with a strong smell of tar. There is a very large area of that which has been reported on by the Geological Survey, and it is quite possible that oil wells of very great value will be found there. There is certainly a very large area of it that shows the existence of petroleum. It has been analyzed and the proportion of petroleum it contains ascertained which is pretty large. This country all the way down to Athabaska lake here (indicating on map) is what I would say

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second class land. There are plots in it that are poor. I saw wheat growing at Pelican rapids and also vegetables growing which were very good, but it is a country of muskegs with spruce timber along the streams. There is a good deal of muskeg with portions of good land, but it is hard to say until it is explored what portion of it will be fit for settlement. We had a steamer from Fort McMurray down the river to Athabasca Lake, and down Slave river, passing the junction of the Peace river here (indicating on map). There is an obstruction in the Slave, and you have to make a portage there of sixteen miles; but from there we got another steamer, the *Wrigley*, that took us down to Great Slave Lake, across that lake and down the MacKenzie and up the Peel river to Fort MacPherson, a distance of 1,300 miles. This steamer drew  $5\frac{1}{2}$  feet of water. The whole distance from Athabasca landing to Fort MacPherson at the delta of the Mackenzie is 1,854 miles. I think Professor Macoun mentioned that I had seen wheat growing at a point very far north.

## GROWTH OF WHEAT AT FORT PROVIDENCE.

On July 15 I was at Fort Providence, I had seen grain before at other points that I am not mentioning here. Here is Fort Providence (indicating on map) in latitude 61 degrees 25 min., or about 550 miles farther north than Edmonton. That is where, on July 15, I saw the wheat in milk that was spoken of the other day. I also saw potatoes in flower, peas fit for use, tomatoes, turnips, rhubarb, beets, cabbage, onions, &c., and fruits such as strawberries, which were ripe at the time, raspberries, currants, gooseberries, and saskatoons. This was a small field of wheat of not over two acres I should say, at the Roman Catholic mission. I took a photograph of it but unfortunately it did not turn out very well. There was a very fine field of potatoes and a part in wheat, and the wheat was headed out and the grain fully formed on July 15. It had been, I understood, sown on May 20. I was very anxious to know whether that wheat had ripened or not this year, and fortunately, within the last few weeks Mr. Laird, from Winnipeg, who accompanied me down on the *Wrigley*, and who saw the field of wheat, came into my office a few weeks ago and told me that when he returned on the boat he went out to see the wheat on July 28, and the wheat had then been cut.

*By Mr. Smith (Wentworth):*

Q. Did those in charge say that it was an ordinary occurrence for wheat to ripen there?

A. I understood they grew wheat frequently, but I did not have an opportunity of seeing anyone that could give me much information about it.

*By Mr. Burrows:*

Q. Did you find out whether there is any considerable extent of land that could be cultivated in that district?

A. That was difficult to ascertain in passing along the river. The whole stretch of country along the Mackenzie river from Great Slave Lake to the delta of the Mackenzie is nearly all alluvial soil, very similar in appearance to the soil of the Northwest prairie.

My object in going down was to investigate and ascertain the timber resources of the country. I do not want to say, and I do not want it to go out as my opinion, that the whole of that district is capable of growing wheat; I would not want to say that all the country was as good as it is along the rivers; I rather think if you go back a short distance from the river very frequently you will fall into muskeg, but you will get another tributary stream, perhaps, and along the banks of that stream you will find alluvial deposits. Wheat has been grown further north than Fort Providence, not very much farther north, but farther down the river at Fort Simpson it has been grown. I do not know of any farther north. All the way down and particularly at Simpson we found the same vegetables as at Providence. Here is Fort Simpson at the

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junction with the Liard river. The principal tributaries of the Mackenzie are the Liard, the Peace and the Athabaska.

*By Mr. Lake:*

Q. What height is Providence above the sea level?

A. I am afraid I cannot give the exact figures; they can be obtained. The elevation of Great Slave lake is given at only 200 feet, and Fort Provindence is a short distance below on the Mackenzie river, so the elevation of Providence will be a little less than 200 feet above the sea.

*By Mr. Smith, (Wentworth):*

Q. I suppose that steamer makes several trips during the season?

A. One trip a year.

Q. How long does it take to make the journey?

A. I was going to say that I left Athabaska Landing on the 8th of June and reached Fort MacPherson on the 21st July. It was the 2nd of July when we left Fort McMurray. The water was very low otherwise we would not have taken so long a time as three weeks. We went from Fort McMurray to Fort McPherson in 19 days. We were about a week getting across the portage on Slave river where an obstruction of some 16 miles has to be overcome. We were there just when the water was coming down from the mountains. It is a very different thing going back and I did not care to return by the same route. One reason was that I did not care to journey up stream, and the other that I preferred to see the new territory. I hired some Indians at Fort MacPherson and crossed the divide o fthe Rockies. I descended a stream flowing into the Porcupine river and then went on down in a little bark canoe for a distance of about 200 miles. It was the most trying trip I ever had, occupying between four and five days and necessitating my remaining all the time in the one position. I was therefore very glad when the opportunity came to get out and stretch my limbs. I was compelled to sit behind an Indian in a little canoe which was more like an Eskimo kayak than anything else. I went down to Fort Yukon in Alaska and from there got a steamer and proceeded to Dawson City.

## LOCAL SUPPLY OF SALT.

An interesting fact which I noted in my journey was that the Hudson Bay Company do not import salt, but get their supply of that article from the Salt river, about 25 miles below Fort Smith on the Slave river. Now any of you that have read Sir Alexander Mackenzie's narrative of his discovery of the Mackenzie river will remember that he speaks of burning banks near the junction of the Great Bear river with the Mackenzie at Fort Norman. Those fires are still burning. Sir Alexander Mackenzie descended the river in 1798. The banks were burning, as he said, and I saw them burning for about a mile in distance at a point about four or five miles below Fort Norman.

## A BURNING COAL MINE.

*By Mr. Burrows:*

Q. There are coal seams in the river bank, are there not?

A. Yes, the fire is burning in the seams of coal or lignite.

*By Mr. Lake:*

Q. Is that supposed to have continued for a hundred years?

A. Yes, they say so, but not in the same place. You will see traces all along the banks. For a distance of 25 or 30 miles there are evidences of the fire in the charred clay.

*By the Chairman:*

Q. In what condition is the salt found that you spoke of?

A. It is found in the bed of the stream when the water goes down. It is granulated and coarse. It is not rock salt, but there is rock salt in the Bear river I understand.

Now at Fort Good Hope, within a few miles of the Arctic Circle in latitude 66° 16' and 970 miles farther north than Edmonton, I saw cabbages, onions, potatoes, &c., growing in the gardens.

*By an Honourable Member:*

Q. What kind of specimens were they?

Q. I was too early to see.

*By Mr. Chisholm:*

Q. What time does the first frost visit there?

A. I could not say, but they told me they did not expect any frost until about the first of September.

*Mr. Smith (Wentworth):*

Q. They claim that they grow crops of potatoes every year?

A. They can produce them as far north as the Arctic Circle.

#### EXTERMINATION OF FOREST ANIMALS.

*By Mr. Herron:*

Q. What is the nature of the fur-bearing animals from Athabaska north?

A. Well, the country is so large and there is such an extent of it that what is common in one part will not be common in another. Beaver were very common a few years ago through a large extent o fthat country. I understand they have become almost exhausted in many districts. I have found in the far north that the marten was the principal fur-bearing animal.

*By Mr. Wilson (Russell):*

Q. Did you see any musk ox?

A. No, they are confined to the far north on the barren lands more particularly. The wood buffalo are confined to the district around Slave lake and the Peace river. It seems a great pity that they could not be preserved. Their numbers have dwindled to about 150.

*By Mr. Burrows:*

Q. Are they being killed out?

A. I could not say. I have heard that they were some killed at times, and I have no doubt there are.

#### DECREASE OF INDIAN POPULATION BY DISEASE.

*By Mr. Jackson, (Selkirk):*

Q. What about the Indian population there?

A. The Indians are decreasing. At Fort Simpson, which is a prominent post of the Hudson Bay Company, there are not the same number of Indians that there were about thirty years ago.

*By Mr. Barr:*

Q. What is the number at Fort Simpson?

A. Well, the Indians are migratory in their habits. They move about from place to place and especially during the hunting season. I will be able to furnish that in-

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formation later. I have it here but it will take some time to find it. The records of the Hudson Bay Company at Fort Simpson show the following—the population in 1827, it goes back to that date, was 868 souls. In 1889 it was 234, a decrease of 634.

*By Mr. Wilson (Lennox):*

Q. Was that reduction caused by dying off or by the movement of the Indians to other parts of the country?

A. Just as I say they are so migratory. I would not place very great reliance on those figures as showing the extent of the decrease, but there is no doubt they are decreasing.

Q. But you ought to have some knowledge from what you heard when you were there whether they are dying off or whether they are moving from place to place?

A. Well, I know, of course, they are dying.

Q. But that great decrease must be accounted for one way or the other?

A. The decrease, judging from appearances, and from what I saw, is that they are decreasing from death. They are in a transition stage. The Indians formerly lived outside, now they are building their little huts and they get in them in winter, they have little box stoves, and they are extravagant in fuel as they are in everything else, they are extravagant in heat; perhaps a dozen of them will get in one of these little huts and they will have it so hot that a white man cannot stay in there, but they remain there breathing the most frightful air, and the result is that consumption is everywhere visible, the Indians everywhere seem very susceptible to that disease. I believe that the records in the Grand river where they are past that transition stage and where they have become accustomed to dwelling in houses, show that they are increasing. But throughout the entire district consumption was prevalent, you could see it everywhere among the Indians in the far north. So much so that in a report I have made I have strongly recommended that the Parliament of Canada should certainly do something to subsidize or to contribute towards the cost of a few physicians to go down into that country and administer to the needs of those Indians.

*By Dr. Barr:*

Q. Would not carpenters to build them proper houses be better?

A. I could not say as to that. But in every Indian settlement that we visited, when I joined the Indians at Fort MacPherson and went across the mountains with them, we visited several of their camps and in each case we found sick people wanting to know if we had medicine. 'Have you any medicine' was the cry of the sick everywhere. Some of them were the victims of chronic disease that perhaps a simple surgical operation would cure, but they were condemned to live there year after year without any relief. I asked some of the missionaries about it, and one of them who had some medical knowledge told me that he thought appendicitis was just as prevalent there as it was here, and that many of the cases could be cured by an operation, and he wished he had enough knowledge to operate. In that whole country there was not a single physician for a distance of 1,500 miles.

Q. But does not the government furnish physicians and medicine to the Indians?

A. Where the Indians are under treaty there are physicians employed by the government, but these Indians are not under treaty and therefore they have no physicians. In fact, going down the Athabaska river we had a young man take sick. We had no chance of doing anything, there was no physician anywhere and he died in about eight days, a case probably of appendicitis. When I got to Fort Good Hope I expected to see a young man there but found that he was very sick, they could not do anything for him he was so far gone and died the next day. There was no chance of getting medical aid at all for him; no medical aid can be obtained there except such as the missionaries are able to give. I do not know whether the disease of this young man was such that a physician could have done him any good, but he was a young

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man who had gone down there to work for one of those companies. This is a very sad state of affairs.

*By Mr. Smith (Wentworth):*

Q. What about the value of the forest in this district for timber, lumber?

A. That is an important question to ask. The object of my journey was to ascertain as far as possible whether it was correct or not that the tree growth extended as far north as supposed. I found spruce, poplar and birch growing right up to the delta of the Mackenzie.

Q. How large would they grow?

A. I do not mean to say that there are any large timber limits so far north as that, but from the appearance of the timber lying on the bars of Great Slave lake and along Slave river and perhaps further down beyond where the Liard joins the Mackenzie the size of the timber lying on the shores gave evidence that up these streams, that is up the Peace and up the Liard, there must be very good timber.

Q. What kind of timber?

A. There is cottonwood and spruce, very large cottonwood.

Q. Is there much large spruce?

A. I saw spruce probably three feet at the butt but many are smaller, drifted up on the shore. There was enough timber up along the bars and on the shores there to run a large mill for a considerable time, for several years. Now, I will speak of what I saw along the river itself. There is spruce, principally spruce, that is except the poplar, all the way down to the delta (indicating on map). Right at this point—Point Separation—at the delta of the Mackenzie, I saw timber trees from 16 to 18 inches in diameter. The houses at Fort MacPherson are built with timber.

Q. Log houses?

A. Log houses, and one, viz., the church was built of sawn lumber. Many of you who have travelled in the north country know what a lobstick is. It is generally a spruce tree which has been trimmed of its branches so as to make it a conspicuous object which can be seen at a long distance. These lobsticks are used to commemorate some particular event in that particular district. At Point Separation there are two of these trees which were marked by Sir John Franklin and Sir John Richardson when they separated; the place was called Point Separation for the reason that they separated there, Franklin going around this way to the north (indicating on map), and Richardson going around here, and you will remember the very difficult time he had. These trees must be 16 or 18 inches in diameter, but one of them is dead. The Indians say they made a cache there, and buried a lot of whiskey before separating. I doubt that very much because the Indians say they never found it.

Witness retired and the committee adjourned.

Having read over the foregoing transcript of my evidence, I find it correct.

E. STEWART,  
*Superintendent of Dominion Forestry.*